Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently Amended) A modem~~,~~ comprising:

~~a carriergroup transmitting means configured to be coupled to a transmission channel;~~

a carriergroup receiving means configured to ~~be coupled to the transmission channel for receiving~~ to receive parameters relating to a plurality of carriers~~;~~ ~~in the transmission channel;~~

a carriergrouping ~~means, configured to be coupled to the carriergroup transmitting means and to the carriergroup receiving means, for determining~~ means configured to determine a plurality of carriergroup parameters and at least one dynamically variable size carrier group for the plurality of ~~carriers in the transmission channel based on the parameters received by the carriergroup receiving means~~ carriers based on the parameters, at least one of the plurality of carriergroup parameters being a worst case parameter of the plurality of carriers within the at least one dynamically variable size carrier group; and

~~a tone decoder configured to be coupled to the transmission channel;~~

~~wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter and is used to dynamically set up the tone decoder;~~

~~wherein the~~ a carriergroup transmitting means ~~transmits~~ configured to transmit at least one message ~~to the transmission channel comprising~~ including the plurality of carriergroup parameters and the at least one dynamically variable size carrier group.

2.   (Currently Amended) The modem of claim 1, wherein at least one of the

plurality of carriergroup parameters ~~transmitted by the carriergroup transmitting means~~

comprises:

a carriergroup ~~SNR~~ signal-to-noise ratio (SNR) parameter for the ~~plurality of~~

~~carriers~~ at least one dynamically variable size carrier group.

3.   (Currently Amended) The modem of claim 1, wherein the ~~plurality of~~

~~carriergroup parameters~~ worst case parameter comprises:

a worst case ~~SNR~~ signal-to-noise ratio (SNR) [[for]] of the at least one

dynamically variable size ~~carriergroup~~ carrier group.

4.   (Currently Amended) The modem of claim 1, wherein at least one of the

plurality of ~~carriergroup~~ carrier group parameters comprises:

a carriergroup bitloading parameter for the at least one dynamically variable size

carrier group.

5-6.   (Cancelled)

7.   (Currently Amended) The modem of claim 1, further comprising:

means for using the at least one message ~~to the transmission channel comprising~~

~~the plurality of carriergroup parameters and the at least one carrier group~~ to set up a tone

encoder in a far-end modem ~~coupled to the transmission channel~~.

8.   (Currently Amended) A method for grouping a plurality of carriers in a

DMT communication system, ~~the method comprising the steps of:~~ comprising:

determining at least one dynamically variable sized carrier group for the plurality of carriers used for communication in the DMT communication system;

determining a plurality of carriergroup parameters for the at least one dynamically variable sized carrier group, at least one of the plurality of carriergroup parameters being a worst case parameter of the plurality of carriers within the at least one dynamically variable size carrier group;

using the plurality of carriergroup parameters to dynamically set up a tone decoder, wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter decoder; and

sending at least one message using the tone decoder, the at least one message including comprising the plurality of carriergroup parameters.

9.   (Currently Amended)   The method of claim 8, wherein the step of determining the plurality of carriergroup parameters for the at least one dynamically variable sized carrier group carriergroup comprises:

determining a carriergroup signal-to-noise ratio (SNR) for the at least one dynamically variable sized carrier group.

10.   (Currently Amended)   The method of clam 9, wherein the carriergroup [[signal-to-noise ratio]] SNR for the at least one carrier group [[is]] comprises:

a worst case [[signal-to-noise ratio]] SNR [[for]] of the plurality of carriers within the at least one dynamically variable sized carrier group.

11.   (Currently Amended)   The method of claim 8, wherein the step of determining the plurality of carriergroup parameters for the ~~carriergroup~~ at least one dynamically variable sized carrier group comprises:

determining at least one carriergroup bitloading for the at least one ~~carriergroup~~ dynamically variable sized carrier group.

12-13. (Cancelled)

14.   (Currently Amended)   The method of claim 8, ~~wherein the at least one message comprising the plurality of carriergroup parameters is used to~~ further comprising:

[[set]] setting up a tone encoder in a far end modem using the at least one message.

15.   (Currently Amended)   A method for grouping a plurality of carriers in a DMT communication system, the DMT communication system ~~comprising~~ including a near end and a far end modem, ~~the method~~ comprising:

determining at least one dynamically variable sized ~~carriergroup~~ carrier group from the plurality of carriers used for communication in the DMT communication system;

determining a carriergroup signal-to-noise ratio (SNR) for the at least one ~~carriergroup~~ dynamically variable sized carrier group;

determining a carriergroup bitloading and a carriergroup gain for the at least one ~~carriergroup~~ dynamically variable sized carrier group based on the carriergroup [[signal-to-noise ratio]] SNR;

using the carriergroup bitloading and the carriergroup gain ~~for the at least one carriergroup for~~ to dynamically ~~setting~~ set up a tone ~~decoder~~ encoder in the near end modem; and

using the carriergroup bitloading and the carriergroup gain ~~for the at least one carriergroup for transmitting~~ to transmit messages from the near end modem to the far end modem using the tone encoder.

16.   (Currently Amended) The method of claim 15, wherein the carriergroup ~~signal to noise ratio for the at least one carriergroup is~~ SNR comprises:

a worst case ~~signal to noise ratio~~ SNR [[for]] of the plurality of carriers within the at least one dynamically variable size carrier group.

17 - 18.   (Cancelled)

19.   (Currently Amended)   The method of claim 15, wherein the communication system is a VDSL system.

20.   (Currently Amended) A modem for grouping a plurality of carriers in a DMT communication system coupled to a far-end modem via a transmission channel, ~~the modem~~ comprising:

carriergrouping means ~~for determining~~ configured to determine multiple dynamically variable sized carrier groups for the plurality of carriers and ~~for determining~~ to determine a plurality of carriergroup parameters for each of the multiple carrier groups at least one of the plurality of carriergroup parameters being a worst case parameter of the plurality of carriers within each of the multiple carrier groups; and

carriergroup transmitting means ~~for transmitting~~ <u>configured to transmit</u> messages ~~comprising~~ <u>including</u> the plurality of carriergroup parameters to the far-end modem via the transmission channel[[,]] to enable the far-end modem to send and receive messages using the multiple carrier ~~groups; and~~ <u>groups, the carriergroup transmitting means including</u>:

a tone ~~decoder~~ <u>encoder</u> coupled to the transmission channel ~~wherein the plurality of carriergroup parameters is used to~~ <u>configured to transmit the messages, the tone decoder being</u> dynamically set up <u>based upon the plurality of carriergroup parameters</u> ~~the tone decoder and wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter~~.

21.   (Currently Amended) The modem of claim 20<u>,</u> wherein the plurality of carriergroup parameters comprises<u>:</u>

a ~~signal to noise ratio~~ <u>signal-to-noise ratio (SNR)</u>.

22.   (Currently Amended) The modem of claim 20<u>,</u> wherein the plurality of carriergroup parameters for each of the multiple carrier groups comprises<u>:</u>

a worst case signal-to-noise ratio <u>(SNR)</u> for ~~the specified carrier group~~ <u>each of the multiple carrier groups</u>.

23.   (Currently Amended) The modem of claim 20<u>,</u> wherein the plurality of carriergroup parameters comprises<u>:</u>

a carriergroup bitloading parameter <u>for each of the multiple carrier groups</u>.

24 - 25.   (Cancelled)

26. (Currently Amended) The modem of claim 20, wherein the messages ~~comprising the plurality of carriergroup parameters~~ are used to set up a tone encoder in the far-end modem coupled to the transmission channel.

27. (Currently Amended) The method of claim 15, ~~wherein the carriergroup bitloading and the carriergroup gain for the at least one carrier group is used to~~ <u>further comprising</u>:

[[set]] <u>setting</u> up a <u>second</u> tone encoder in a far end modem <u>using the carriergroup bitloading and the carriergroup gain</u>.

28. (New) The method of claim 1, wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter.

29. (New) The method of claim 1, further comprising:

setting up a tone encoder using the plurality of carriergroup parameters.

30. (New) The method of claim 8, wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter.

31. (New) The modem of claim 20, wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter